



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/588,084

08/25/2007

Masahiko Samukawa

128805

2031

25944 7590 02/22/2011
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER

JOLLEY, KIRSTEN

ART UNIT

PAPER NUMBER

1715

NOTIFICATION DATE

DELIVERY MODE

02/22/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
jarmstrong@oliff.com

Office Action Summary	Application No.	Applicant(s)	
	10/588,084	SAMUKAWA ET AL.	
	Examiner	Art Unit	
	Kirsten C. Jolley	1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's after-final amendments filed 2/4/11 have been entered. The 35 USC 112, 2nd paragraph and 35 USC 103(a) rejections set forth in the final Office action of 11/4/10 have been withdrawn in response to Applicant's amendments to the claims.
2. In the final rejection mailed 11/4/10, the Examiner indicated allowability of the claims if they were amended to overcome the 35 USC 112, 2nd paragraph rejections. However, upon further search and consideration of the claims, the Examiner notes that the reasons for allowance in paragraph 5 of the final rejection were not correct. The Beltz et al. reference is newly cited for its teaching that it is known to vary the rotational speed of the substrate during application between the periphery and the remainder of the spiral when coating in a spiral shape, and more specifically that the substrate is rotated at a higher speed when coating towards the center of the substrate (in the spiral) than at the periphery (ring shape), as discussed in more detail below. Accordingly, the finality of the prior Office action has been withdrawn, and this action is made non-final.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1715

4. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn et al. (US 6,352,747) in view of Beltz et al. (US 4,451,507).

With respect to claims 1, 4, 9, and 20, Blackburn et al. discloses a method of coating a photochromic lens (abstract) comprising: dripping the coating liquid in a vicinity of an outer circumference on the coating surface of the lens; thereafter dripping the coating liquid in a spiral shape toward a geometrical/optical center of the lens (col. 3, lines 35-39); and thereafter smoothing the coating liquid on the coating surface with a high speed spinning step (col. 3, lines 21-23); wherein the nozzle is positioned so as to be vertically ascendable/descendable and horizontally moveable in a diameter direction (col. 8, lines 48-51). The coating film has a photochromic function. While the Examiner notes that Blackburn et al. only specifically teaches a spiral coating step, it would have been obvious to a design engineer having ordinary skill in the art to have started the spiral shape by first coating around the entire periphery of the substrate, thus forming a ring shape around the periphery, because otherwise part of the periphery would be left uncoated, which is undesirable in this uniform coating method.

Blackburn et al. teaches coating spirally from the outer periphery of the substrate towards the center, however the reference lacks a teaching of varying the spin speed of the substrate during coating/dripping. Beltz et al. is cited for its teachings that it is desirable when coating a substrate spirally to vary the spin speed of the substrate so that the liquid is dispensed as a continuous spiral bead at a substantially constant volume per square (col. 3, lines 5-11). Beltz et al. teaches that, as the dispenser moves from the center of the wafer towards the periphery, the surface spin rate must decrease at a rate of $1/R$ where R is the radial position of the arm over the wafer (col. 8, lines 54-64), as illustrated by Figure 6. While Beltz et al. is directed to a method

Art Unit: 1715

of coating from the center towards the periphery, similar principles would apply in a reversed method of coating from the periphery towards the center, i.e., the surface spin rate must increase at a rate of $1/R$ in order to maintain the constant spiral bead volume per square dimension. It would have been obvious for one having ordinary skill in the art to have incorporated the surface spin speed variation taught by Beltz et al. into the process of Blackburn et al. with the expectation of improved coating uniformity, resulting in meeting the limitation of setting a rotational speed of the object at a time of dripping in the ring shape (at the outer periphery) to be a smaller value than a rotational speed of the object at a time of dripping the coating liquid in the spiral shape.

Further, as to claim 20, Blackburn et al. does not teach waiting for the coating liquid to spread over the coating surface prior to the second spinning/"smoothing" step. Beltz et al. teaches use of a pause in the rotation of the wafer at the end of the dispense step, and before high speed spinning/smoothing, for a "heal" period which allows the coating to deform to a flat shape, as illustrated in Figure 9 (col. 11, lines 1-22). It would have been obvious for one having ordinary skill in the art to have similarly incorporated a heal/waiting period after dispensing and before smoothing in the process of Blackburn et al. in order to allow time for the coating to deform to a flat shape from its applied semicircular shape thus improving uniformity.

As to claims 2 and 5, the coating surface of the lens in Blackburn et al. has a convex curved shape.

As to claims 3 and 6-8, Blackburn et al. lacks a teaching of the coating liquid's viscosity. It would have been obvious for one having ordinary skill in the art to have determined the optimum viscosity through routine experimentation depending upon the particular coating

Art Unit: 1715

material to be applied, its desired thickness, and based on the spin coating process parameters, etc., in the absence of a showing of criticality.

As to claims 10-14, it is the Examiner's position that an engineer skilled in the art would have adjusted the positioning and movement of the nozzle, as well as rotational speed, based on the shape data of the lens, including its diameter and surface curve since Blackburn et al. teaches that its process may be used to coat lenses having a low or high base curvature (col. 7, lines 64-65), and the coating results would necessarily vary for different shapes/lens curvatures.

As to claim 15, the Examiner notes that it is well known in the spin coating art to adjust the pressure for dripping the coating liquid based on the temperature of the coating liquid so that flow rate is constant because the temperature of the coating liquid affects its viscosity, and the viscosity likewise then affects the pressure required to expel the drips from the nozzle. It would have been obvious for one having ordinary skill in the art to have adjusted the pressure to maintain constant flow rate, for the above reasons and further because Beltz et al. teaches the criticality of depositing a constant volume of coating solution onto the rotating substrate per square dimension.

As to claim 16, Blackburn et al. teaches a step of smoothing the applied coating liquid by spinning the lens in col. 3, lines 21-23.

As to claims 17-19, while Blackburn et al. does not teach use of a plurality of smoothing steps, the Examiner notes that it is well known in the spin coating art to determine the optimum amount of spinning that results in smoothing and leveling of a coating through routine experimentation depending upon the particular coating material used, substrate used, length and speed of rotation, the topography of the substrate, etc., in the absence of a showing of criticality.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C. Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kirsten C Jolley/
Primary Examiner, Art Unit 1715

kcj